New Hampshire

Guidelines for Diabetes Care

A Public-Private Partnership

New Hampshire Department
of Health & Human Services
Division of Public Health Services
Diabetes Education Program

New Hampshire Diabetes Coalition
Guidelines Committee

Health Care Providers
throughout New Hampshire

NEW HAMPSHIRE

GUIDELINES FOR DIABETES CARE

Table of Contents for Web Version

Guidelines for Diabetes Care

		Frequency	Description/Comments
History & Physical	Blood Pressure and Weight	Every 3 Months	If BP above 130/80 initiate measures to lower
	Fundoscopic Exam	Every 3 Months	
	Dilated Eye Exam	Annual	Refer to ophthalmologist or optometrist
	Oral Exam	Annual	Examine for lesions and yeast infections
	Foot Exam	Every 3 Months	Visual exam **without** shoes and socks every visit
	Pedal Pulse and Monofilament	Annual	Refer to podiatrist if indicated
	Skin Evaluation	Ongoing	Sx assessment q 3 mo
	Gyn Evaluation	Annual	Speculum exam annually
	Flu Vaccine	Every Fall	
	Pneumovax	As Indicated*	Varies with age and risk
	Smoking Status	Annual/Ongoing	Check every visit/Encourage smoking cessation
	Review Treatment Plan	Every 3 Months	Check self monitoring log book: diet, exercise
	Review Education Plan	Initial/Ongoing	Refer for diabetes education
Labs	A1c	Every 3 Months	For patients in general: <7%; Ideal individual target: as close to normal (< 6.0%) as possible without significant hypoglycemia
	Fasting/Random Blood Glucose	As Indicated	Compare lab result with glucose self monitoring
	Fasting Lipid Profile	Initial/Ongoing	Follow current AHA or NCEP Guidelines
	Urinanalysis	Annual	If protein negative or trace, test for microalbumin If ≥ 1+ proteinurea, test 24 hr urine protein and CrCl and initiate treatment as indicated
	Urine Microalbumin/Creatinine	Initial/Annual	Test if protein negative or trace on UA If positive, recheck q 3 mo. x 2 before treatment
	Serum Creatinine	Initial/Annual/As Indicated	Check at least 2x/year if patient on metformin
	Thyroid Function	Initial	Every 5 years in type 1
Self Management	Self-Management Principles	Initial/Ongoing	See diabetes education content areas on reverse side Refer to diabetes education as needed
	Glucose Self Monitoring	Every 3 Months	Assess progress / Negotiate goals
	Medical Nutrition/ Weight Management	Every 3 Months	Assess progress / Negotiate goals Refer to dietitian
	Physical Activity/ Exercise Levels	Annual/Ongoing	Assess/Prescribe based on patient's health status
Counseling	Tobacco Use	Annual/Ongoing	Assess readiness / Counsel cessation / Refer
	Alcohol/Substance Abuse	Ongoing	Utilize CAGE questionnaire / Counsel / Refer
	Foot/Skin Care	Every 3 Months	Educate on daily care and inspection
	Psychosocial Status	Annual/Ongoing	Suggest diabetes support group / Counsel / Refer
	Sexuality/Impotence	Annual/Ongoing	Discuss diagnostic evaluation and therapeutic options
	Preconception	Initial/Ongoing	Need for tight glucose control 3-6 mo preconception
	Pregnancy	Initial/Ongoing	Early referral to OB/GYN

*See pneumococcal vaccination fact sheet for details

These guidelines are based on the "American Diabetes Association: Clinical Practice Recommendations 2006"
These guidelines are not intended to replace the clinical judgment of healthcare providers.

This project is funded by a cooperative agreement between the Centers for Disease Control and Prevention, Division of Diabetes Translation and the New Hampshire Department of Health and Human Services, Division of Public Health Services, Diabetes Education Program. For more information, please call 1-800-852-3345 x5173 or 603-271-5173

Content Areas for Diabetes Education

A high quality diabetes self-management education program should provide comprehensive instruction in the content areas listed below. The curriculum, instructional methods and materials should be appropriate for each individual's needs, considering the type and duration of diabetes, age, cultural influences and learning styles.

Based on the needs of each individual, diabetes education programs should offer instruction in the following content areas as identified by the American Diabetes Association:

- Diabetes overview, including the disease process
- Nutrition
- Exercise and activity
- Medications
- Monitoring and use of results
- Prevention, detection and treatment of acute complications
- Prevention, detection and treatment of chronic complications
- Behavior change strategies, goal setting, risk factor reduction and problem solving
- Stress and psychosocial adjustment, including family involvement and social support
- Preconception care, pregnancy and gestational diabetes

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New Hampshire
Guidelines for Diabetes Care
Introductory Information:

These pages will introduce you to this edition of the *New Hampshire* Guidelines for Diabetes Care.

Introductory Letter
Table of Contents (as it appears in the hard copy version of the Guidelines)

Dear Colleague:

During the last few years recommendations for diabetes care have continued to evolve. There is clear evidence that intensive management of diabetes will prevent or delay long-term complications. More recent evidence has also shown a decrease in cardiovascular incidents among people with diabetes with tight control (NEJM 2005;353:2643-2653). Many new therapies make it possible to achieve tight glycemic control. The Diabetes Prevention Program (DPP) study indicated that type 2 diabetes can be prevented or delayed and research toward a cure for type 1 diabetes continues. (NEJM 2002 346(6): 393-403).

The NH Diabetes Coalition, in collaboration with the NH Department of Health and Human Services, Division of Public Health Services, Diabetes Education Program, has revised the widely distributed *Guidelines for Diabetes Care*. These *Guidelines* summarize the most recent information about diabetes management and prevention for use with adults in the primary care setting.

The New Hampshire *Guidelines for Diabetes Care* are based on the American Diabetes Association Clinical Practice Recommendations 2006. The *Guidelines* were developed by an advisory group of the NH Diabetes Coalition comprised of endocrinologists, family physicians, nurse practitioners, certified diabetes educators, dietitians, and clinicians from managed care organizations. In addition, the draft was reviewed by medical directors from the Foundation for Healthy Communities and Community Health Access Network, as well as several physicians in private practice.

The New Hampshire *Guidelines for Diabetes Care* first were published in the spring of 1998. This packet represents the fifth edition of these materials. Future revisions of the *Guidelines* are planned.

These Guidelines are not intended to replace the clinical judgment of health care practitioners. The purpose of this resource is to highlight and summarize essential components of quality diabetes management and to offer tools for use in the primary care setting. Please feel free to adapt these tools specifically for your practice.

We hope you will find theses *Guidelines* to be useful both in your practice and in our collective efforts to improve diabetes care in New Hampshire. We would be grateful if you could return the evaluation form to help us improve future editions of this packet.

Sincerely,

The New Hampshire Diabetes Coalition

Contents

RIGHT POCKET

- Diabetes Care Card/patient wallet card (not available electronically)
- Getting Started – Road Map to Quality Diabetes Care
- Revised Diagnosis, Screening and Classification of Diabetes Mellitus
- Pre-Diabetes – A Serious Condition
- Pre-Diabetes-patient brochure
- Goals for Diabetes Management
- Glucose A1c Comparison
- Diabetes Medication Reference – Oral Agents
- Medications for Type 2 Diabetes
- Symlin Fact Sheet
- Byetta Fact Sheet
- Intensive Insulin Therapy
- Insulin Sheet
- Cardiovascular Disease and Diabetes
- Body Mass Index Table
- Foot Inspection and Monofilament Use Guide
- Foot Poster
- Screening for Microalbuminuria
- Pregnancy & Diabetes

LEFT POCKET

- Guidelines of Diabetes Care (laminated card)
- Flow Sheet for Diabetes Care
- Blood Glucose Log
- Influenza Immunization
- Pneumococcal Immunization
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- Oral Health
- Diabetes in New Hampshire
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- Directory of Diabetes Educators in NH
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- NH Diabetes Advisory Group Member List
- Guidelines Subcommittee Member List
- Order Form

For additional information on any material in this packet please call The NH Department of Health & Human Services, Division of Public Health Services, Diabetes Education Program at 1-800-852-3345 ext. 5173 or (603) 271-5173

This project is funded by a cooperative agreement between the Centers for Disease Control and Prevention, Division of Diabetes Translation and the New Hampshire Department of Health and Human Services, Division of Public Health Services, Diabetes Education Program.

New Hampshire
Guidelines for Diabetes Care
Clinical Information:

The documents in this section are primily based on the recommendations of the American Diabetes Association. Useful charts and clinical information on specific aspects of prediabetes and diabetes, its diagnosis, management and complications, will be found among these pages.

Body Mass Index Table
Cardiovascular Disease and Diabetes
Diagnosis, Screening and Classification
Foot Inspection and Monofilament Guide
Glucose A1c Comparison
Goals for Diabetes Management
Immunizations: Influenza and Pneumococcal
Insulin and Intensive Insulin Therapy
Medications: Oral Medications, Medication Reference, Byetta and Symlin
Pre-Diabetes
Pregnancy: Pregnancy and Diabetes, Gestational Diabetes Keypoints
Screening for Microalbuminuria

For a web based BMI calculator, visit:
www.cdc.gov/ncdphp/dnpa/bmi/cdc-bmi.htm#English

Body Mass Index Table

	Normal						Overweight					Obese										Extreme Obesity															
BMI	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**
Height (inches)	**Body Weight (pounds)**																																			
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389	396	404	412	420
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443

Source: Adapted from *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*.

Cardiovascular Disease and Diabetes

Diabetes is a cardiovascular disease. The incidence of atherosclerosis, including coronary, cerebrovascular and peripheral vascular disease, is 2-4 fold greater in adults with diabetes. Atherosclerosis begins at a younger age in people with diabetes and occurs equally in men and women with diabetes and may pre-date the diagnosis of diabetes. **Atherosclerosis accounts for 80% of the mortality in adults with diabetes.**

All cardiac risk factors should be evaluated and aggressively treated in patients with diabetes:

Risk Factor	Goal	Comment
Hypertension	BP ≤ 130/80	The result of the United Kingdom Prospective Diabetes Study (UKPDS) regarding blood pressure highlights the importance of blood pressure control in reducing diabetes related mortality, cardiovascular events and microvascular complications. Guidelines recommend adjusting the treatment regimen to achieve a BP ≤ 130/80.
Dyslipidemia	LDL ≤ 100 mg/dL (≤ 70 mg/dL per NCEP)	Treat dyslipidemia aggressively to reduce the risk of coronary heart disease in patients with diabetes. Therapy to reduce LDL levels should be the first priority. Weight loss, exercise, niacin and smoking cessation may be useful to raise HDL.
Cigarette Smoking	Avoidance Cessation	Healthcare providers should advise all patients with diabetes not to initiate tobacco use and should advise those who smoke to quit.
Hyperglycemia	A1c < 7%*	Diabetes is a cardiovascular disease. Heart disease is The #1 killer of people with diabetes.
Obesity : BMI > 30, Overweight > 27	BMI < 27 < 120% desirable weight	People with diabetes derive an even greater benefit from a healthy diet and exercise than those without diabetes.
Sedentary Lifestyle	Increased activity	30 minutes of exercise per day is recommended.
Microalbuminaria	None or delayed Progression**	This is an important marker for high risk of accelerated coronary artery disease.

*The A1c goal for patients, in general, is <7%. The A1c goal for the individual patient is an A1c as close to normal (<6%) as possible without significant hypoglycemia. The NCEP goal is <6.5%.
** The effectiveness of treating microalbuminuria on reducing the risk of cardiovascular disease has not been proven, yet remains an area of active investigation.

References:

American Diabetes Association (2006)., *Diabetes Care*, 29, Suppl. 1.

Grundy, S.M., Benjamin, I.J, et al. (1999). Diabetes and cardiovascular disease: A statement for healthcare professionals from the American Heart Association. *Circulation*, 100: 1131-1116.

LDL Treatment Recommendations for patients with Diabetes: ADA and AACE/NCEP

ADA recommendations regarding initiation of treatment (LDL in mg/dL)

	Medical Nutrition Therapy		Pharmacologic Therapy	
	Initiation Level	LDL Goal	Initiation Level	LDL Goal
With Co-Morbid Conditions: Coronary Heart Disease, Peripheral Vascular Disease, Coronary Vascular Disease, etc.	≥ 100	< 100	≥ 100	< 100
Without Co-Morbid Conditions: Coronary Heart Disease, Peripheral Vascular Disease, Coronary Vascular Disease, etc.	≥ 100	< 100	≥ 130	< 100

Source:American DiabetesAssociation (2003) Management of dyslipidemia in adults with diabetes*Diabetes Care* 26 (Suppl 1).

AACE and NCEP: LDL Goals and Cutpoints for Therapeutic Lifestyle Changes (TLC)* and Drug Therapy

Risk Category	LDL-C Goal	Initiate TLC	Consider Drug Therapy[9]
High risk: CHD or CHD risk equivalents (includes diabetes) (10-year risk of event >20%)	<100 mg/dL (optional goal: <70 mg/dL)	≥100 mg/dL	≥100 mg/dL (<100 mg/dL: consider drug options)[9]

Reference: Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). National Institutes of Health, National Heart, Lung and Blood Institute, NIH Publication No. 01-3670 May 2001.

*Recommended Therapeutic Lifestyle Changes (TLC) are as follows:

- Reduced intake of saturated fats (<7% of total calories) and cholesterol (<200mg/day)
- Therapeutic options for enhancing LDL lowering such as plant stanols/sterols (2g/day) and increased viscous (soluble) fiber (10-25g/day)
- Weight reduction
- Increased physical activity

ACE and ARB Therapy

Both Angiotensin-converting enzyme inhibitors (ACEs) and angiotensin receptor blockers (ARBs) work to prevent cardiac and renal damage in people with diabetes. Based on this knowledge, the ADA recommends as follows:

"All patients with diabetes and hypertension should be treated with a regimen that includes either an ACE inhibitor or an ARB. If one class is not tolerated, the other should be substituted. If needed to achieve blood pressure targets, a thiazide diuretic should be added.

If ACE inhibitors, ARBs or diuretics are used, monitor renal function and serum potassium levels."

Reference: American Diabetes Association (2006), Diabetes Care, 29, Suppl. 1.

Aspirin Therapy in Diabetes

Aspirin therapy should be used in all adults over age 21 with diabetes who are at increased cardiovascular risk (including those with hypertension, smoking, dyslipidemia, albuminurea, a family history of coronary heart disease or those who are over 40 years of age). Daily intake of low-dose, enteric coated aspirin (75-162mg/day) has been shown to reduce cardiovascular events in patients with diabetes, without significantly elevated risk of hemorrhagic stroke. Contraindications include aspirin allergy, bleeding tendency, anticoagulant therapy, recent gastrointestinal bleeding and clinically active hepatic disease.

Source: American Diabetes Association. Clinical Practice Recommendations 2006. Diabetes Care. 29. Suppl. 1, S19.

Diagnosis, Screening and Classification of Diabetes Mellitus

Diagnostic Criteria

A FPG value ≥ 126 mg/dL (confirmed by repeat testing)[1] is diagnostic for diabetes. The diagnostic cut point (FPG ≥ 126 mg/dL)[3] is based on the observation that this degree of hyperglycemia usually reflects a serious metabolic abnormality that has been shown to be associated with serious complications. These criteria are for diagnosis and are not treatment criteria or goals. At this time the A1c is not recommended for diagnosis.

	Test		
Stage	Fasting Plasma Glucose (FPG)[1] (preferred)	Casual Plasma Glucose[2]	Oral Glucose Tolerance Test (OGCT)[3]
Diabetes	FPG ≥ 126 mg/dL (≥7.0 mmol/l)	Casual plasma glucose ≥ 200 mg/dL (11.1 mmol/l) plus symptoms	Two-hour plasma glucose (2hPG) ≥ 200 mg/dL
Impaired Glucose Homeostasis now called Pre-Diabetes	Impaired Fasting Glucose (IFG) = FPG ≥ 100 and < 125 mg/dL (5.6-6.9 mmol/l)		Impaired Glucose Tolerance (IGT) = 2hPG ≥ 140 and < 200 mg/dL
Normal	FPG < 100 mg/dL (<5.6 mmol/l)		2hPG < 140 mg/dL

[1]The FPG is the preferred test for diagnosis, but any one of the three listed is acceptable. Fasting is defined as no caloric intake for at least 8 hours. The diagnosis should be confirmed by repeating one of these tests on a subsequent day, in the absence of severe hyperglycemia with acute metabolic decompensation.
[2]Casual is defined as any time of day without regard to time since last meal; symptoms are the classic ones of polyuria, polydipsia, and unexplained weight loss.
[3]OGTT should be performed using a glucose load containing the equivalent of 75g anhydrous glucose dissolved in water. The OGTT is not recommended for routine clinical use.

Screening Recommendations

In asymptomatic, undiagnosed individuals, testing for diabetes should be considered in all individuals at age 45 years and above (particularly in those with a BMI ≥25) and, if normal, it should be repeated at three year intervals.

Testing should be considered at a younger age, or be carried out more frequently, in individuals who are overweight (BMI ≥25) and with additional risk factors as follows:

- have a first degree relative with diabetes
- are members of a high-risk ethnic population (African American, Latino, Native American, Asian American, Pacific Islander)
- have delivered a baby weighing > 9 lb. or were diagnosed with GDM
- are hypertensive (≥ 140/90) or have a history of vascular disease
- have an HDL cholesterol level < 35 mg/dL and/or a triglycerides level > 250 mg/dL
- have other clinical conditions associated with insulin resistance (PCOS, acanthosis nigricans)
- on previous testing, had IGT of IFG

The FPG is the preferred screening test because of its ease of administration, convenience, acceptability to patients and lower cost. The A1c is not recommended for screening purposes.

Classification

The terms “insulin-dependent diabetes mellitus” (IDDM) and “non-insulin-dependent diabetes mellitus” (NIDDM) have been eliminated.

The terms “type 1” and “type 2” have been kept but use Arabic rather than Roman numerals.

Type 1 diabetes is characterized by beta cell destruction, usually leading to absolute insulin deficiency. It has two forms: Immune-Mediated Diabetes Mellitus and Idiopathic Diabetes Mellitus. Immune-Mediated Diabetes Mellitus results from a cellular mediated autoimmune destruction of the beta cells of the pancreas. Idiopathic Diabetes Mellitus refers to forms of the disease that have no known etiology.

Type 2 diabetes is characterized by insulin resistance and by relative (rather than absolute) insulin deficiency. People with type 2 diabetes can range from being predominantly insulin resistant with relative insulin deficiency to being predominantly deficient in insulin secretion with insulin resistance.

A state of impaired glucose homeostasis called “impaired fasting glucose” (IFG) has been defined as a fasting plasma glucose of ≥ 100 mg/dL but < 126 mg/dL. The stage called “impaired glucose tolerance” (IGT) is retained and is defined as an oral glucose tolerance test value of ≥ 140 mg/dL but < 200 mg/dL. Both IFG and IGT refer to metabolic stages of impaired glucose homeostasis that are intermediate between normal glucose homeostasis and diabetes. Now called pre-diabetes (in the absence of pregnancy), these laboratory values indicate risk for future development of diabetes and cardiovascular disease.

Gestational Diabetes Mellitus (GDM) has been retained. Low-risk women: are less than 25 years of age, are of normal body weight, have no family history of diabetes mellitus AND are not a member of an ethnic/racial group with a high prevalence of diabetes (Hispanic, African American, Native American, Asian). No change is recommended to the current diagnostic criteria for GDM.

Foot Inspection and Monofilament Use

There should be a visual foot inspection at every visit. Monofilament and pedal pulse exams should be performed at least annually to screen for diabetic neuropathy and peripheral vascular disease.

The Semmes-Weinstein monofilament exam provides a constant 10 grams of pressure without the risk of perforating the skin.

The foot exam also provides an excellent opportunity to educate your patients about proper daily foot care.

The Exam:

- Have the patient look away or close his or her eyes.
- Randomly test the sites shown on the diagram. Avoid any ulcers, calluses or sores.
- Touch the monofilament to the skin until it bends, then gently remove it.
- Elicit a response from the patient at each site. Lack of sensation at any given sites may indicate diabetes neuropathy. Ask the patient to say 'yes' when he/she feels you touching his/her foot with the monofilament. DO NOT ASK THE PATIENT 'did you feel that?'
- The monfilament should be cleaned after each patient exam.

For further reference:

"Prevention of Foot Problems in Persons with Diabetes"
The Journal of Family Practice, vol 49, no.11.

TO ORDER MONOFILAMENTS:

The U.S. Dept of Health and Human Resources, Bureau of Primary Health Care provides a listing of sources for monofilaments at the following website:
http://bphc.hrsa.gov/nhdp/Monofilament_Sources_RR.htm

Approximate Comparison of Blood Glucose and A1c Values

A1c%	Mean plasma glucose mg/dL
6	135
7	170
8	205
9	240
10	275
11	310
12	345

Correlation between A1c levels and mean plasma glucose levels on multiple testing over 2-3 months, based on data from the Diabetes Control and Complications Trial. Glycated hemoglobin A1c has become the preferred standard for assessing glycemic control [1].

The national Glycohemoglobin Standardization Program (NGSP) was formed in 1996 to standardize the A1c test to DCCT values. All manufacturers of A1c test assay methods are encouraged to seek NGSO certification on an annual basis. Generally, a 1% change in A1c levels corresponds to a change in mean blood glucose of 35 mg/dl [2].

References:

[1]Rohlfing CL, Wiedmeyer H-M, Little RR, England JD, Tennill A, Goldstein DE: Defining the relationship between plasma glucose and HbA1C: analysis of glucose profiles and HbA1C in the Diabetes Control and Complications Trial. Diabetes Care 25: 275-278, 2002.

[2] Medical Management of Type 1 Diabetes, Fourth Edition, American Diabetes Association: pg 28-29, 2004.

Goals for Diabetes Management

Glycemic Control

	Normal	Goal (ADA)
Fasting Before Meals	<100 mg/dL	90-130 mg/dL
Peak Postprandial (1–2 hours after eating)	<140 mg/dL	<180 mg/dL
Hemoglobin A1c	<6%	<7%*

*The American Diabetes Association recommends the A1c goal for people in general is <7%. **However, the goal for the individual is an A1c as close to normal (<6%) as possible without significant hypoglycemia.**

The American Association of Clinical Endocrinologists recommends a goal A1c of ≤6.5%.

Peak Postprandial Glucose:

The American Diabetes Association recommends a goal for peak postprandial glucose of <180 mg/dL.

Following a meal, expert endocrinologists (AACE) recommend a goal of <160 mg/dL at one hour and <140 mg/dL at two hours.

References:
American Diabetes Association. Standards of Medical Care in Diabetes-2006. (Position Statement). *Diabetes Care*, 97, (Suppl 1) S4-S42.

American Association of Clinical Endocrinologists Medical Guidelines for the Management of Diabetes Mellitus: The AACE System of Intensive Diabetes Self-Management. *Endocrine Practice*. Vol. 8 (Suppl. 1) January/February 2002, 43.

Influenza Immunization for Persons with Diabetes

Why get immunized?

- Influenza (flu) can be a serious disease.
- People with diabetes are at increased risk for complications from influenza. Immunization is the best defense.

What are the two types of flu vaccine?

- The "flu shot" – an inactivated vaccine (containing killed virus) that is given with a needle, usually in the arm.
- The nasal-spray flu vaccine – a vaccine made with live, weakened flu viruses that do not cause the severe symptoms generally associated with the influenza virus. This is only approved for healthy people, age 5 to 49 years of age, and is not recommended for people with diabetes.

What are the side effects from the flu shot?

- The influenza vaccine "flu shot" is very safe. The viruses in the vaccine are killed so you cannot get influenza from the vaccine.
- Mild problems may include soreness, redness or swelling where the shot was given, fever or aches. If these problems occur, they usually begin soon after the shot and last 1-2 days. Severe allergic reaction has been reported very rarely.

Who should get vaccinated?

- Anyone with diabetes over 6 months of age. The vaccine is also recommended for individuals living or working closely with people with diabetes.

When to get vaccinated?

- Every year. Because the virus responsible for the flu changes frequently, a vaccine is required every fall. October or November are the best times to get vaccinated. People may be vaccinated as late as December.

What is the cost?

- The cost of influenza vaccination is covered by Medicare and many other insurance plans. Speak with your doctor or insurance company, or look for a flu vaccine clinic in your area.

References:

US Department of Health and Human Services, Centers for Disease Control and prevention, National Immunization Program.
Influenza and Pneumococcal Immunization in Diabetes, American Diabetes Association, *Diabetes Care*, 27:S111-S113, 2004.
American Diabetes Association, Clinical Practice Recommendations, 2006, Diabetes Care, page S17.

Pneumococcal Immunization for Persons with Diabetes

Why get vaccinated?

- Pneumococcal disease can result in serious infections involving the lungs, blood, and brain.
- People with diabetes are at increased risk from pneumococcal disease. Immunization is the best defense.

Who should get vaccinated?

- Anyone with diabetes over 2 years of age. (A different type of pneumococcal vaccine is now recommended for children less than 2).

How many doses of the vaccine are needed?

- Usually one dose of vaccine is all that is needed.
- Re-vaccination may also be recommended for persons with certain medical problems like kidney failure. A second dose is also recommended for those people 65 and older who got their first does when they were under 65, if five or more years have passed since the earlier dose.

What is the cost?

- The cost of pneumococcal vaccination is covered by Medicare and many other insurance plans.

What are the side effects from the vaccine?

- The pneumococcal vaccine is very safe.
- About half of the people who get the vaccine have very mild side effects such as redness or pain at the injection site.
- Less than 1% develop fever or muscle aches.
- Severe allergic reaction has been reported very rarely.

References:

US Department of Health and Human Services, Centers for Disease Control and prevention, National Immunization Program, Influenza and Pneumococcal Immunization in Diabetes, American Diabetes Association, *Diabetes Care*, 27:S111-S113, 2004.
American Diabetes Association, Clinical Practice Recommendations, 2006, Diabetes Care, page S17.

Insulin

Action Times of Human Insulins and Insulin Analogues

	Onset	Peak	Duration
Lispro (Humalog®)	10 minutes	30-60 minutes	2-4 hours
Aspart (Novolog®)	10 minutes	30-60 minutes	2-4 hours
Glulisine (Apidra®)	10 minutes	30-60 minutes	2-4 hours
Regular	½-1 hour	2-3 hours	4-6 hours
NPH	2-4 hours	4-10 hours	10-16 hours
Glargine (Lantus®)	2-4 hours	peakless	24 hours
Detemir (Levemir®)	2-4 hours	peakless	up to 24

Lente and Ultralente insulins have been discontinued (Nov ’05), as have all pork derived insulins.

Intensive Insulin Treatment
Basal Bolus Therapy

The challenge of insulin therapy is in attempting to mimic physiologic insulin action. In the non-diabetic pancreas the beta cells secrete a constant low rate of insulin, as well as an appropriate amount of insulin in response to a post-prandial rise in blood glucose.

A regimen of long-acting insulin taken once daily with rapid-acting insulin taken just before meals is most like normal physiology. This can be accomplished with multiple daily injections or the basal and bolus delivery of an insulin pump (continuous subcutaneous insulin infusion or CSII).

Insulin regimens must be adjusted to achieve targets of pre-meal blood glucose of 90 – 130 mg/dL, peak postprandial of < 180 mg/dL and A1c of < 7%. The A1c goal for the individual patient is an A1c as close to normal (<6%) as possible without significant hypoglycemia (based on American Diabetes Association Clinical Practice Recommendations, 2006).

- Basal insulin doses are adjusted to achieve pre-meal glucose targets.
- Bolus doses are adjusted, based on anticipated carbohydrate consumption and planned exercise, to achieve post-meal glucose targets.
- The individual's sensititivy is considered in adjusting doses.
- This proactive approach differs from a traditional sliding scale, which reacts only to the current blood glucose level.

Intensive insulin therapy is complex and often involves a team approach, including:

- A dietitian to teach carbohydrate counting
- A nurse to teach insulin administration and insulin delivery devices as well as blood glucose monitoring and interpretation of the results
- A physician to select and adjust the types and doses of insulin

Intensive insulin therapy may not be appropriate for patients who lack hypoglycemia awareness.

Oral Medications for Type 2 Diabetes

Name	Description	Dosage (mg)	Maximum Daily Dose (mg)	Doses per day
FIRST GENERATION SULFONYLUREAS				
DIABENESE® (chlorpropamide)	blue,flat on one side, scored tablet	100 250	750	1-2
DYMELOR® (acetohexaminde)	white, oblong scored tablet	250 500	1500	1-2
ORINASE™ (tolbutamide)	white, round scored tablet	500	3000	2-3
TOLINASE® (tolazamide)	white, round scored tablet	100 250 500	1000	1-2
SECOND GENERATION SULFONYLUREAS				
MICRONASE® (glyburide)	round, scored tablet white, dark pink, blue	1.25 2.5 5.0	20	1-2
DIABETA® (glyburide)	oblong, scored tablet white, blue, yellow	1.25 2.5 5.0	20	1-2
GLYNASE® (glyburide)	oblong, scored tablet white, blue, yellow	1.5 3.0 6.0	12	1-2
GLUCOTROL® (glipizide)	white, scored tablet diamond shaped	5 10	40	1-2
GLUCOTROL XL™ (glipizide)	white, unscored round tablet	2.5 5 10	20	1
AMARYL® (glimepiride)	oblong, scored tablet pink, green, blue	1 2 4	8	1
See individual fact sheets for information on Symlin and Byetta.				

Name	Description	Dosage (mg)	Maximum Daily Dose (mg)	Doses per day
BIGUANIDE				
GLUCOPHAGE® (metformin)	white, film coated round, round oval tablet	500 850 1000	2550	2-3
GLUCOPHAGE XR® (metformin)	white, capsule-shaped tablet	500 750	2000	1-2
ALPHA-GLUCOSIDASE INHIBITORS				
PRECOSE™ (acarbose)	round, white	25 50 100	300	3
GLYSET™ (miglitol)	round, white film-coated table	25 50 100	300	3
MEGLITINIDE				
PRANDIN™ (repaglinide)	round, unscored tablet: white, yellow, orange	0.5 1.0 2.0	16	3
THIAZOLIDINEDIONES				
AVANDIA® (rosiglitazone)	pentagonal, film-covered tablet: pink, orange, maroon	2 4 8	8	1-2
ACTOS™ (pioglitazone)	round, white, unscored tablet	15 30 45	45	1
D-PHENYLALANINE DERIVIATIVE				
STARLIX® (nateglinide)	tablet: pink, round, yellow, oval	60 120	360	3
See individual fact sheets for information on Symlin and Byetta.				

Diabetes Medication Reference: Oral Agents

Class	Drug	Action	Pros	Cons
Alpha-Glucosidase Inhibitors	**Acarbose (**Precose™) **Miglitol (Glyset™)**	Prevents absorption of glucose from GI tract via competitive reversible inhibition of enzymes used to break complex sugars into absorbable sugars.	1. Acts locally, little systemic absorption. 2. Helps control post-prandial hyperglycemia. 3. Administered alone will not cause hypoglycemia.	1. Ineffective if not taken with first bite of meal. 2. May cause abdominal bloating, diarrhea, and flatulence. (typically resolve in 8-12 weeks). 3. Can contribute to hypoglycemia if used in combination with other diabetes medications. If hypoglycemia occurs, treat with glucose or dextrose tablets. Sucrose will not be effective. 4. Can not use in patients with inflammatory bowel disease (UC, Crohn's) or with cancer. 5. Should not be used in patients with creatinine >2 6. Increases liver transaminases with increasing dose.
Biguanides	**metformin** (Glucophage®, Glucophage®XR Riomet – liquid form of Metformin)	Decreases hepatic glucose output. Decreases insulin resistance. Increases peripheral glucose use by muscle and adipose tissue.	1. Administered alone will not cause hypoglycemia. 2. Does not cause weight gain. 3. Decreases LDL and triglycerides.	1. Contraindicated with renal dysfunction. Do not use if creatinine ≥ 1.5 in males or ≥ 1.4 in females. 2. Contraindicated in patients with significant liver disease or with excessive alcohol intake. 3. GI side effects (anorexia, bloating, diarrhea) typically resolve in 4-8 weeks. 4. May contribute to hypoglycemia if used in combination with other diabetes medications. 5. Stop before, and hold for 48 hours after, IV contrast. 6. Low but real risk for lactic acidosis. 7. Caution required in patients with CHF or hepatic disease 8. Can begin use in patients ≥ 80 years only if creatinine clearance is normal. 9. May cause resumption of ovulation in anovulatory women
Meglitinides	**repaglinide** (Prandin™)	Increases insulin secretion.	1. Rapidly absorbed and rapidly eliminated. 2. Helps control post-prandial hyperglycemia. 3. Dosing based on number of meals consumed.	1. Hypoglycemia. 2. Weight gain. 3. Rarely, thrombocytopenia, leukopenia, elevated hepatic enzymes. 4. Cautious use with renal or hepatic dysfunction.

The combination tablets have the actions, pros and cons of both agents.

Class	Drug	Action	Pros	Cons
D-phenylalanine derivatives	**nateglinide** (Starlix®)	Increases insulin secretion.	1. Stimulates rapid, short-acting insulin secretion. 2. Does not cause late hyperinsulinemia which reduces the risk of hypoglycemia 3. Dosing based on number of meals consumed.	1. Hypoglycemia (Low Risk) 2. Weight gain. 3. Caution required in patients with moderate liver disease.
First Generation Sulfonylureas	**chlorpropamide** (Diabenese®) **tolazamide** (Tolinase®) **tolbutamide** (Orinase™)	Increases insulin secretion.	1. Decreases LDL and triglycerides.	1. Hypoglycemia (may be prolonged or severe with chlorpropamide). 2. Weight gain. 3. Numerous drug interactions. 4. Disulfiram-like reaction with alcohol (chlorpropamide). 5. Hyponatremia (chlorpropamide). 6. Questionable increased cardiovascular mortality.
Second Generation Sulfonylureas	**glipizide** (Glucotrol®, Glucotrol XL™) **glyburide** (Micronase®, Diabeta®, Glynase®) **glimepiride** (Amaryl®)	Increases insulin secretion. Questioned increase in target cell sensitivity to insulin (glimepiride).	1. Decreases LDL and triglycerides.	1. Hypoglycemia 2. Weight gain. 3. Sensitivity to sunlight (glyburide). 4. Questionable increased cardiovascular mortality.
Thiazolidine-diones	**rosiglitazone** (Avandia®) **pioglitazone** (Actos™)	Increases target cell response to insulin. Decreases hepatic glucose output. Increases insulin dependent glucose use in skeletal muscle.	1. Decreases exogenous insulin requirements. 2. Increases HDL. 3. Decreases triglycerides with pioglitazone	1. Need to monitor serum transaminase levels according to FDA warnings. (Hepatocellular injury occurred with troglitazone, which was withdrawn in March 2000). 2. Risk of unanticipated pregnancy due to decreased effectiveness of oral contraceptive and resumption of ovulation in anovulatory women. 3. Insulin dose may need to be reduced. 4. May cause weight gain, anemia and edema. 5. Increased LDL with rosiglitazone. 6. Caution indicated in patients with hepatic disease, CHF, or with a history of alcohol abuse. 7. May contribute to hypoglycemia if used in combination with other diabetes medications. 8. Pioglitazone: Increased HDL & decreased Triglycerides.

The combination tablets have the actions, pros and cons of both agents.

Byetta™ (exenatide) Injection

What is it?
Byetta is an injectable medication for adults with type 2 diabetes who do not take insulin. It is an incretin mimetic which is a compound that mimics many of the actions of incretin (gut) hormones. It is a synthetic equivalent of GLP-1 which is made in the L-cells in stomach, and first isolated in the saliva of the Gila monster.

How does it work?
Reduces fasting and postprandial glucose through these actions:

- Stimulates insulin secretion when glucose levels are high
- Restores 1st phase insulin response (1st 10 minutes after food ingested)
- Reduces serum Glucagon concentrations after meals
- Slows gastric emptying which limits rise in blood glucose following a meal
- Reduces food intake

Indication
Byetta is used when desired glucose control has not been achieved in patients taking metformin and/or a sulfonylurea.

Contraindications

- Hypersensitivity to Byetta or any of its components
- Type 1 Diabetes
- Gastroparesis
- Renal Disease
- Pregnancy and Breastfeeding

Possible Side Effects

- **Hypoglycemia**
  Most episodes were linked to the dose of Byetta and the sulfonylurea.
  Hypoglycemia was rare in patients taking Byetta and metformin
- **Nausea, vomiting, diarrhea**

How is it supplied?
30-day prefilled pen:

- 5 mcg per dose, 60 doses, 1.2mL prefilled pen NDC 66780-210-07
- 10 mcg per dose, 60 doses, 2.4mL prefilled pen NDC 66780-210-08

(Pen needles are not included – a separate prescription is needed.)

When is it taken?
Byetta should be injected up to 60 minutes prior to breakfast and dinner
If nausea is an issue it is best to inject just 15 minutes prior to the meal
Antibiotics and oral contraceptive agents should be taken at least 1 hour before injecting Byetta.

Please see full prescribing information for more details.
www.Byetta.com Phone: 800-868-1190

Symlin® (Pramlintide Acetate Injection)

What is it?
Symlin is an injectable medication for adults with type 1 or type 2 diabetes who take insulin. Pramlintide is a synthetic analog of human amylin, the pancreatic hormone co-secreted with insulin that helps to control glucose in the postprandial period.

How does it work?
- Slows gastric emptying, so reduces postprandial rise in glucose
- Prevents a postprandial rise in plasma glucagon concentrations
- Promotes satiety, leading to a decreased calorie intake

What is its indication for use?
Symlin is used when desired glucose control has not been achieved:
- Type 1 diabetes- an adjunct treatment to mealtime insulin
- Type 2 diabetes – an adjunct treatment to mealtime insulin, with or without the concurrent use of sulfonylurea and/or metformin

Symlin works with insulin to help control blood glucose. It is necessary to reduce mealtime insulin by half when starting Symlin. It is taken with meals or snacks that contain at least 250 calories or at least 30 grams of carbohydrate

What are the contraindications?
- Hypersensitivity to Symlin or any of its components
- Gastroparesis
- Hypoglycemia unawareness
- Concomitant use of medications that stimulate gastrointestinal motility
- Poor adherence with home blood glucose monitoring
- Not approved for use in children

What are the side effects?
- Hypoglycemia – there is a black box warning on the prescribing information regarding this risk. Insulin doses must be reduced.
- Nausea – this is transient and dose related.

How is it supplied?
5 mL vials (NDC 66780-110-01) containing 0.6 mg/mL pramlintide

Please see full prescribing information for more details.
www.SYMLIN.com 800-349-8919

Pre-Diabetes: A Serious Condition

It's no longer a "Touch of Sugar" or "Borderline Diabetes"

Your patients must be warned of the risks of Pre-Diabetes, a condition affecting nearly 41 million Americans that sharply increases the risk for developing type 2 diabetes and increases the risk of heart disease by 50%. The greatest increase in the incidence of diabetes is in the 30-40 year age group.

Testing for Pre-Diabetes

Fasting Plasma Glucose Results	***2-h 75g Oral Glucose Tolerance Test***
Normal < 100mg/dL	Normal < 140 mg/dL
Pre-diabetes ≥ 100 and < 126 mg/dL	Pre-diabetes ≥ 140 and ≤ 199 mg/dL
Diabetes ≥ 126 mg/dL	Diabetes ≥ 200 mg/dL

Test for type 2 diabetes every 1 to 2 years after a diagnosis of Pre-Diabetes.

What can be done?

Intervene early for pre-diabetes patients to delay diagnosis or keep from progressing to diabetes. Allow your patients to "Turn back the clock".

1) Inform your patient that she/he has "pre-diabetes" and refer them to a dietitian or diabetes educator for specific behavior change goals including an exercise prescription and nutrition goals to achieve weight loss. (The patient will need to check with their health care plan for specific coverage).
2) The Diabetes Prevention Program showed that a modest 5 to 10% weight loss and physical activity (30 minutes daily) could prevent or delay the onset of type 2 diabetes by up to 58%.[1]

Who should be screened?

All patients who are 45 years or older (screen every three years)

Patients younger than 45 years, overweight (BMI ≥ 25 kg/m^2) with one or more of the following:

- Inactive lifestyle (exercise less than 3 times per week)
- A first-degree relative with diabetes
- A member of a high-risk ethnic population -African American, Latino, Native American, Asian
- History of delivering a baby weighing > 9 lbs. or a prior diagnosis of gestational diabetes
- Hypertension (≥ 140/90mm Hg) or a History of vascular disease
- HDL cholesterol level ≤ 35 mg/dL and/or a triglyceride level ≥250 mg/dL
- Impaired Glucose Tolerance (IGT) or Impaired Fasting Glucose (IFG) on previous testing
- Other condition associated with insulin resistance (i.e. PCOS, acanthosis nigricans)

Billing codes for prediabetes:

ICD-9: 790.21 Impaired Fasting Glucose
ICD-9: 790.22 Impaired Oral Glucose Tolerance Test
ICD-9: 790.29 Other Abnormal Glucose
ICD-9: 277.7 Dysmetabolic Syndrome X (must use additional codes for associated manifestations such as cardiovascular disease (414.00-414.06) or obesity 278.00 – 278.01)

[1] Reduction in the incidence of type 2 diabetes with lifestyle intervention on metformin. Diabetes Prevention Research Program. *New England Jnl of Medicine*.2002; vol 346, no. 6.

Pregnancy and Diabetes

The prevalence of type 2 diabetes in adolescents and women of childbearing age has increased significantly. Counseling for women with both type 1 and type 2 diabetes is essential for a healthy outcome for the mother and child. Nearly all diabetes-related birth defects could be prevented with good blood glucose control before and during pregnancy. Tight glycemic control is especially important during the first 8 weeks following conception.

Preconception Counseling

All women of childbearing years with type 1 or type 2 diabetes
Excellent blood glucose control is critical 3-6 months prior to conception

- Target glucose levels: Fasting 70 – 110 mg/dL
  2 hours after eating 70 – 140 mg/dL
- Target A1c < 1% above normal range, lower if possible
- Stop any oral agent and begin insulin
- Physical exam with evaluation of renal and cardiac function
- Referral for dilated retinal exam
- Referral to dietitian

Risks to mother from poor blood glucose control

- Hypertension
- Hypoglycemia in early pregnancy
- Hyperglycemia or diabetic ketoacidosis later in pregnancy
- Increased likelihood of miscarriage

Risks to baby from poor blood glucose control

- Birth defects most often affect the heart, nervous system, spine, digestive tract and urinary tract
- Macrosomia
- Stillbirth
- Hypoglycemia immediately after birth

For women with previous history of Gestational Diabetes or Polycystic Ovary Syndrome (PCOS)

- Counsel to limit concentrated carbohydrates such as juices and sweetened beverages
- 50 gram 1 hour oral glucose tolerance test is recommended at 12 weeks of gestation
- If normal, repeat at 24-28 weeks of gestation

If a woman with diabetes comes to you pregnant:

- Stop any oral agent and begin insulin
- Encourage frequent blood glucose monitoring
- Aim for target blood glucose goals*:
  Fasting ≤ 95 mg/dL
  One hour post prandial ≤ 140 mg/dL
  Two hour post prandial ≤ 120 mg/dL
- A mean glucose value of ≤ 86 may increase risk for small for gestational age fetus.
- Practice the team approach: physician and diabetes educators (nurses and dietitians)
- Refer to ophthalmologist for eye exam at baseline and repeat each trimester
- Consider a referral to high risk obstetrical team and/or endocrinologist

***The same target blood glucose goals apply for women diagnosed with gestational diabetes.**

Gestational Diabetes Guidelines Keypoints

Screening

- Universal screening is recommended at 24 – 28 weeks gestation.
- Recommended screening test is a 1 hour 50 g oral glucose challenge test (OGCT) in a non-fasting state. The test is positive if serum/plasma glucose is ≥ 130 – 140 mg/dl. If this screen is positive a diagnostic 100 g 3 hour oral glucose tolerance test (OGTT) is indicated. (A threshold of ≥140 identifies about 80% of women with GDM, ≥130 identifies 90%).
- Early screening as soon as feasible is indicated for patients with the following risk factors for preexisting DM:
  - Obesity (BMI ≥ 30)
  - Age ≥ 40 years
  - Hypertension
  - History of GDM
  - Polycystic Ovarian Syndrome (PCOS)
  - Ethnic groups with a high prevalence of type 2 DM (e.g. Latino, Native American, African American, Asian American, Pacific Islander)
  - Insulin resistance syndrome/metabolic syndrome/pre-diabetes
- Rescreen Patients with above risk factors at 24-28 weeks gestation if early 50 g OGTT screen is negative.

Diagnosis

- If the patient's 1 hour 50 g OGCT screening test is ≥ 200 mg/dl, then a diagnosis of GDM is highly likely and treatment may be initiated without further testing
- The definitive test for GDM is a 3 hour 100 g OGTT in a fasting state after a 3-day carbohydrate loading diet.

3 hour 100 g OGTT*		
Time	ADA (Carpenter and Coustan)	National Diabetes Data Group
Fasting	≥ 95	≥ 105
1 Hour	≥ 180	≥ 190
2 Hour	≥ 155	≥ 165
3 Hour	≥ 140	≥ 145

Two or more elevated values define GDM.

If one abnormal value, recommend exercise and nutrition counseling and either repeat OGTT in one month or perform periodic glucose monitoring.

*ACOG supports the use of either set of diagnostic criteria.

Medical Nutrition Therapy

- See Gestational Nutrition Guidelines

Urine Ketone Testing

- Usefulness of urine ketone testing in all patients with GDM is controversial.
- Consider urine ketone testing if:
  - Patient <90% ideal body weight.
  - Patient experiences weight loss or if there are concerns about the patient's nutrition.
  - Insulin is initiated
- Ketone test first morning urine for 1 week after initiation of nutrition therapy and again after initiation of insulin therapy to ensure no ketosis occurs due to calorie restriction.
- Discontinue ketone testing if all results are trace or less. Interpretation of small ketones needs to take into consideration that it may represent normal pregnancy physiology.

Blood Sugar Monitoring

- All patients with GDM should do home glucose monitoring with finger stick blood sugars.
- Optimal finger stick values are
  - Fasting ≤ 95 mg/dl
  - 1 hour postprandial ≤140 mg/dl
  - 2 hour postprandial ≤ 120 mg/dl (less preferred time for testing)
- **Testing Regimen**

  First Week: 4 times per day (fasting and one or two hour postprandial)

  Subsequent weeks: Optimal control with diet only – test 2 days each week 4 times per day

  Resume daily testing for 1 week for any abnormal value

  Insulin requiring patients – ongoing daily testing 4x per day (more often if clinically indicated).

Insulin Management

- Allow up to one week to obtain optimal control with medical nutrition therapy before initiating insulin.
- Consider starting insulin if more than 2 elevated blood sugars within one week.
- Patient should report results of home glucose monitoring at least 2 – 3 times per week **until in optimal control, then report weekly.** If two or more levels are over target, report to provider.
- If optimal control is not achieved within 2 weeks, then a consultation is encouraged with a physician who has additional expertise in managing insulin in pregnant patients.
- Fetal abdominal circumference measurements may be useful in guiding management and may identify both LGA and SGA fetuses.

Oral Medications

- Oral agents are not currently recommended during pregnancy by either ADA or ACOG.
  - Glyburide has shown no indications of fetal toxicity and may in time prove to be an effective treatment option.
  - Metformin crosses the placenta. Safe use during pregnancy has not yet been firmly established.

Antepartum Surveillance

- Initiate daily fetal movement determination (kickcount) at 28 weeks.
- If euglycemic with diet only: twice weekly nonstress test (NST) starting at 40 weeks.
- If not on insulin, but unable to document euglycemia: twice weekly NSTs starting at 36 weeks.
- If treating with insulin: twice weekly NSTS starting at 32-34 weeks.

Intrapartum Management

- All patients should have either a clinical or ultrasound estimate of fetal weight (EFW) within 2 weeks of delivery.
  - If EFW > 4500 g, then cesarean delivery without trial of labor is reasonable.
  - If EFW 4000-4500 g, then counsel patient regarding a trial labor versus cesarean delivery based on clinical pelvimetry, obstetric history and fetal growth pattern.
  - If EFW < 4000 g, then follow usual obstetric standards.
- Well-controlled patients have little indication for delivery prior to 40 weeks.
- Poorly controlled patients should be considered for delivery before 39 weeks.
- Pursue fetal lung maturity documentation by amniocentesis in patients undergoing induction of labor or cesarean delivery prior to 39 weeks.
- Check intrapartum blood sugars every 1 to 2 hours.
- Insulin use: Initiate insulin drip for fingerstick blood ≥ 120 mg/dl.
  Adjust insulin drip hourly based on fingerstick blood sugar results to keep levels between 70 – 100 mg/dl.

Postpartum Follow-up

- Discontinue insulin therapy with delivery.
- If single casual blood sugar < 200 mg/dl on postpartum day 1-3, then blood sugar monitoring is not required during the postpartum period.
- Casual glucose of ≥200 at any time is diagnostic of Type 2 DM.
- Obtain 2 hour 75 g OGTT at 6-8 weeks postpartum for patients diagnosed with GDM.

Any abnormal value is diagnostic.	Diagnosis of Prediabetes (mg/dl)	Diagnosis of Type 2 DM (mg/dl)
Fasting (alone or on 75g OGTT)	100-125 (IFG)*	≥126
2 hour on 75g OGTT	140-199 (IGT)*	≥200

In the absence of unequivocal hyperglycemia, these criteria should be confirmed by repeat testing on a different day.

- Refer patients with type 2 DM, Impaired Glucose Tolerance, or Impaired Fasting Glucose to Primary Care Provider.
- If the postpartum evaluation does not indicate diabetes, fasting plasma glucose should be assessed at least annually and in preparation for any future pregnancy. Other cardiovascular risk factors should also be assessed regularly.
- **All patients should have a postpartum consultation regarding long-term implications of the history of GDM.**

*IFG = Impaired Fasting Glucose, IGT = Impaired Glucose Tolerance. Either is an indicator of prediabetes.

These guidelines are not intended to replace the clinical judgment of healthcare providers.
This project is funded by a cooperative agreement between the Centers for Disease Control and Prevention, Division of Diabetes Translation, and the New Hampshire Department of Health and Human Services, Division of Public Health Services, Diabetes Education Program. For more information, please call **1-800-852-3345 x5173 or 603-271-5173**.

Screening for Microalbuminuria

Microalbuminuria, a harbinger of renal failure and cardiovascular complications in diabetes, is an albumin concentration in the urine that is greater than normal, but is not detectable with common urine dipstick assays for proteins. Examples of three testing methods are listed below.

Annual screening should continue as long as microalbuminuria is not detected. In those with increased albumin excretion rate on screening, confirmation by repeated testing is required. Once two of three tests are positive for microalbuminuria, treatment for kidney disease is recommended. Refer to current American Diabetes Association Clinical Practice Recommendations for treatment recommendations and refer patient to specialist.

Several factors may influence the albumin excretion rate. Screening should be postponed in the following situations: heavy exercise, acutely elevated blood pressure, urinary tract infection, acute febrile illness, heart failure, excess water consumption, menstruation or significant vaginal discharge. ACE inhibitors or NSAIDs may also influence results.

Albumin : Creatinine Ratio

First morning urine specimen preferred

Normal	microalbuminuria	proteinuria
< 30 mg/g	30 - 300 mg/g	> 300 mg/g

Micral

Dipstick for the semi-quantitative determination of Microalbumin (CLIA waived)

Normal	microalbuminuria	proteinuria
15 -20 mg/g	> 20 mg/g	> 50 mg/g

Timed Urinary Albumin Excretion Rate*

24-hour or overnight (8 – 12 hour) specimen

Normal	microalbuminuria	proteinuria
< 30 mg/24 hours < 20 *u*g/min	30 - 300 mg/24 hours 20 – 200 *u*g/min	> 300 mg/24 hours > 200 *u*g/min

*Although most difficult to collect, this testing method is considered the gold standard.

References

Bennet, P.H., et al. (1995). Screening and management of microalbuminuria in patients with diabetes mellitus: *American Journal of Kidney Diseases.* 25, 107-112.
American Diabetes Association, (1999). Diabetic Nephropathy, Position Statement., *Diabetes Care*, 22, suppl. 1, 66-69.
Micral package insert, Boehringer Mannheim Corporation.

Annual Urine Protein Screening Recommendation

Screen for Microalbuminuria

Spot collection (1st morning is preferred, but not necessary) with albumin specific dipstick.*

If Positive

Review Treatment Components:

- ✧ Get blood pressure below: 130/80
- ✧ Start on ACE inhibitor or ARB if not currently taking one
- ✧ Get Blood Sugars in Optimal Control
- ✧ Refer to Nutritionist for review of dietary protein intake
- ✧ Refer to Diabetes Educator

Test for proteinuria within 3 months
by measuring albumin-creatinine ratio
on an untimed urine sample

If Negative
Recheck Annually

If Positive
Refer to Nephrologist

Urine albumin protein or spot am urine microalbumin/creatinine ratio may be positive or elevated in the setting of poor glucose control, UTI, heavy exercise, fever or sepsis.

*Spot urine test predicts protein excretion as acurately as 24h collection.

Glomerular Filtration Rate: Stages of Chronic Kidney Disease

Stage	Description	GFR (ml/min per 1.73 m^2 body surface area)
1	Kidney Damage (normal or increased GFR)	≥90
2	Kidney Damage (mildly decreased GFR)	60-89
3	Moderately Decreased GFR	30-59
4	Severely Decreased GFR	15-29
5	Kidney Failure	<15 or dialysis

New Hampshire
Guidelines for Diabetes Care
Patient Information / Handouts:

This section contains pages which may be reproduced, or ordered from the New Hampshire Diabetes Education Program, and distributed to patients.

Pre-Diabetes Patient Brochure
Foot Poster
Patient Wallet Cards

What do the test results mean?

Pre-diabetes: A fasting blood sugar greater than 100, but less than 126, or blood glucose between 141 and 199 two hours after eating.

Diabetes: A fasting blood sugar greater than 126 on two separate occasions, or a blood sugar level of 200 two hours after eating.

Normal: A fasting blood sugar less than 100, or a blood sugar of 140 or less, 2 hours after eating.

Spread the Word!
Help prevent the onset of diabetes.
Teach friends and family members about Pre-Diabetes!
Tell family and friends: PRE-Diabetes means PREvention

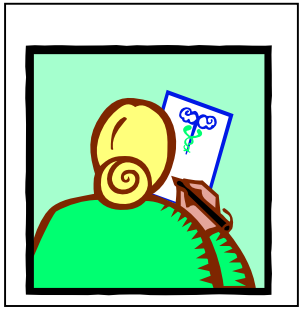
A special thanks for this brochure to:

CRHC Outpatient Diabetes Self-Management
@ Concord Hospital
253 Pleasant Street Suite 301
Concord, NH 03301

LRGHealthcare Diabetes Center
80 Highland Center
Laconia, NH 03246

NH Diabetes Education Program
Division of Public Health Services
Dept of Health and Human Services

National Diabetes Education Program
National Institutes of Health
and the Centers for Disease Control



Are you at Risk for Pre-Diabetes? It's a Serious Condition…

A "Touch of Sugar" or "Borderline Diabetes" are outdated words. Prediabetes is a warning that you could develop type 2 diabetes…

What is pre-diabetes?
Pre-diabetes is when blood sugar levels are higher than normal, but not high enough to diagnose diabetes. People with pre-diabetes are more likely to develop type 2 diabetes and its serious complications, such as heart disease, stroke, blindness, kidney failure.

Blood glucose levels rise as the body's insulin loses its effectiveness. This is called insulin resistance, which is linked to an increased risk of heart disease.

Did you know?
"If your fasting glucose is over 100, you have a 10% to 15% chance of getting diabetes in the next seven years."
Dr. Rizza, vice president of the American Diabetes Association.

It's not too late!!

Turn back the clock and prevent type 2 diabetes!

Lose weight/Eat healthy
Eat smaller portions
10 to 15 pounds can make the difference
Lower total fat and carbohydrate

Exercise 30 minutes daily
Find ways to add extra steps during the day
Find an activity you enjoy–walking, biking, dancing, swimming.

Stop Smoking
Smoking increases insulin resistance and makes it more difficult for blood to flow properly. Ask your physician for new tools to help quit smoking.

Get Adequate Sleep
7 or more hours per night.
Lack of sleep is linked to insulin resistance.

The Diabetes Prevention Program study showed that a modest 5 to 10% weight loss and physical activity (30 minutes daily) could prevent or delay the onset of type 2 diabetes by up to 58%.

Do any of these describe you? If you fit even one, you should be tested for diabetes or pre-diabetes!

- 45 years of age or older
- Overweight (Body Mass Index of 25 or more)
- Family history of diabetes - parent, sibling, grandparent
- African American, Latino, Native American, Asian
- Had a baby weighing over 9 lbs. or had gestational diabetes
- High blood pressure
- Low good cholesterol (HDL) ≤ 35 mg/dl (goal for women is above 55 mg/dl and for men above 45 mg/dl)
- High blood fats called triglycerides ≥ 250 mg/dl (goal is less than 150 mg/dl)
- High blood sugar on a previous glucose test

If you are tested and your result is **normal**, get retested once every 3 years.

If you have **pre-diabetes**, test for type 2 diabetes every 1-2 years. People with pre-diabetes may have IFG (impaired fasting glucose), IGT (impaired glucose tolerance) or both.

For Feet's Sake!

If you have diabetes, please take off your shoes and socks while you wait for your exam!

New Hampshire Diabetes Education Program
Division of Public Health Services

Healthy New Hampshire

Bring your LOG BOOK **and questions to each visit.**

Review the following:

Meal Plan	Smoking Cessation
Exercise Plan	Foot/Skin Care
Medication Use	Sick Day Management
Blood Sugar Testing	Stress Management

I HAVE DIABETES...If I am acting strangely or cannot be awakened, my blood sugar may be low.

- If I cannot be awakened or cannot swallow, do not try to give me anything by mouth. Please contact:

Emergency Medical Services (911) IMMEDIATELY!

- If I can swallow, my treatment for low blood sugar is: _____ My treatment can be found in my: _____
- If I am not better within 5 minutes, please contact:

Emergency Medical Services (911) IMMEDIATELY!

Diabetes Care Card

New Hampshire
Diabetes
Education Program

MEDICATION	DOSAGE	TIME

NAME _____

PROVIDER'S NAME _____

PROVIDER'S NUMBER ( ) _____

TESTS	ADA STANDARD TARGET	ADA STANDARD FREQUENCY	PERSONAL GOAL	VISIT 1 DATE	VISIT 2 DATE	VISIT 3 DATE	VISIT 4 DATE	VISIT 5 DATE	VISIT 6 DATE	VISIT 7 DATE	VISIT 8 DATE
HbA1C	less than 7	every 3 months									
BP	less than 130/80	every visit									
WEIGHT		every visit									
FOOT EXAM		every visit									
FASTING TOTAL CHOLESTEROL		yearly									
HDL/LDL		yearly									
TRIGLYCERIDES		yearly									
URINE TEST FOR PROTEIN		yearly									

DATES OF: PNEUMOVAX _____ FLU SHOT _____ _____ EYES DILATED _____ _____ PELVIC/GU EXAM _____ _____

NH Department of Health and Human Services, Division of Public Health Services
Diabetes Education Program and the NH Diabetes Coalition Guidelines Committee

Revised January 2007

New Hampshire
Guidelines for Diabetes Care
Related Clinical Information:

These pages of the guidelines contain information regarding oral health issues, alcohol abuse and smoking cessation. Practical information is provided to assist practitioners.

Oral Health and Diabetes
Screening for Alcoholism
Smoking Cessation: Tips; Ask, Advise, Refer; 1-800-Try-to-Stop

Oral Health in Persons with Diabetes

Diabetes Control

- Oral infections can make it more difficult to control diabetes.
- Poor glycemic control can increase susceptibility to oral infections.

Risk of Infection

- Persons with diabetes may be more likely to get gum infections, and infections may take longer to heal.
- Long-standing infections can lead to tooth loss.

Natural Dentition

- Because of the importance of proper diet in controlling diabetes, patients with diabetes should be encouraged to care properly for their natural teeth.
- Patients with diabetes may have problems wearing dentures.

Oral Hygiene

- Good oral hygiene will help prevent many oral health problems.
- Bleeding gums may be a sign of infection. Patients with diabetes who notice bleeding gums or lesions in the mouth should see a dentist.

Dental Checkups

- Patients with diabetes should have a dental checkup every 6 months.
- Patients should be sure to inform the dentist about their diabetes.

For further information regarding oral health and diabetes, please visit the website of the American Dental Association: http://www.ada.org/public/topics/diabetes_faq.asp#2.

Screening for Alcoholism

The CAGE Questionnaire

The CAGE Questionnaire is an alcoholism screening tool. This series of four questions may be included in a clinical assessment. The questions may be paraphrased without altering their validity.

C - Have you ever felt you should CUT down on your drinking?

A - Have people ANNOYED you by criticizing your drinking?

G - Have you ever felt bad or GUILTY about your drinking?

E - Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (EYE-OPENER)?

If the patient answers "yes" to two or more of these questions, this is a positive response. This should not be considered to be diagnostic for alcoholism, but will alert the interviewer to the need for further inquiry.

Reference: Ewing, J.A. (1984). Detecting alcoholism: The CAGE questionnaire. JAMA 252, 1905-1907.

Tips for Quitting Smoking…

- Write down your most important reason for quitting and look at it often.
- Set a date to quit and tell your friends, family and co-workers.
- If you usually drink alcoholic beverages, avoid them until you get more used to being a nonsmoker. Alcohol can encourage you to smoke.
- Try to plan ahead for situations that will be especially challenging in the early days of quitting, such as after meals or during break time at work
- Remember – a craving to smoke will pass, whether you light up or not.
- When you have a craving, do something, anything to keep yourself busy and your mind occupied.
- Take deep rhythmic breaths to help you to relax, and try moderate exercise such as walking to relieve stress.
- If you quit for one day, you can quit for another, and it will get easier as each day passes.
- If you do have a cigarette, don't give up, just don't have a second one.

Tobacco
LIVE FREE OR DIE
NH TOBACCO PREVENTION & CONTROL PROGRAM

New Hampshire Department of Health and Human Services
Division of Public Health Services (800) 852-3345 extension 6891

NH Department of Health & Human Services - Division of Public Health Services

Bureau of Prevention Services
Tobacco Prevention and Control Program

Your Patients Listen When You Ask:

"Do you want to quit smoking?"

Your Patients Listen When You Advise:

"Quitting tobacco is the
single best thing
you can do for good health."

Patients Listen When You Refer:

"You can stop. We can help.
Call 1-800-Try-To-STOP."
(1-800-879-8678)

Fax a referral to **1-866-560-9113** for patients ready to quit. There is no cost to your office or to your patients. Cessation Specialists provide this free, confidential and highly personalized counseling service.

For information about the fax referral service, pre-printed fax pads or obtaining brochures for your patients, call Teresa Brown at 603-271-8949. Forms can be downloaded online at:
www.dhhs.state.nh.us/DHHS/ATOD

Tobacco LIVE FREE OR DIE
NH TOBACCO PREVENTION & CONTROL PROGRAM

NH Department of Health and Human Services
Division of Public Health Services
Tobacco Prevention and Control Program
29 Hazen Drive, Concord, NH 03301-6504
1-800-852-3345 ext. 6891, 1-603-271-6891
www.dhhs.state.nh.us/DHHS/ATOD

Healthy New Hampshire

1-800-Try-To-STOP
(1-800-879-8678)

Spanish: 1-800-8-DEJALO
(1-800-833-5256)

What Happens When I Call?

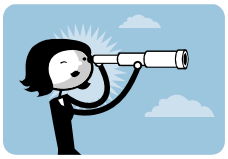
Your Call is Free and Private. A friendly staff person helps tobacco users quit smoking, chewing or dipping tobacco. Anyone in New Hampshire can call whether they are currently using tobacco, have already quit or want information for a friend or family member.

When You Call, You Have a Choice. You decide if you are ready to stop using tobacco and will be offered these choices:

- Self-help materials
- A list of other programs to help you quit smoking
- One-on-one advice over the phone

One-on-One Telephone Counseling. If you choose this option, the staff willmake arrangements to contact you at your convenience. This way, you don't have to remember to call them back. It's great for those days when you are not sure you can stay quit!

Looking for Help?



Get a Quitting Tip Each Day:
1-800-Get-A-Tip (1-800-943-8284)

Tobacco
LIVE FREE OR DIE
NH TOBACCO PREVENTION & CONTROL PROGRAM

Healthy New Hampshire
NH Department of Health and Human Services ● Division of Public Health Services ● Bureau of Prevention Services
Tobacco Prevention and Control Program ● 29 Hazen Drive, Concord, NH 03301-6504
1-800-852-3345 ext. 6891, TDD: 1-800-753-2964 ● www.smokefree.gov

New Hampshire
Guidelines for Diabetes Care
Chart Forms:

These documents are available for reproducing and may be used in patients' charts.

Blood Glucose Log
Flow Sheet for Diabetes Care

Blood Glucose Log

BLOOD GLUCOSE GOALS

	ADA	AACE
Fasting/preprandial	90-130	<110
1 Hour after Meal:	N/A	160 or less
Peak postprandial	<180	N/A
2 Hours after Meal:	N/A	140 or less

Patient Name: _____

Date of Birth: _____

Phone: _____

DATE	Breakfast	Lunch	Dinner	Bedtime	Comments: changes in diet or activity, stress, illness, ketones, hypoglycemia, etc.
January 1	116 / 16 7L	91 / 123 4L	104 / 136 6L	128 14G	Jogged after lunch

Record blood sugar results (before/after meals) and insulin/medication dose in the appropriate

Blood Glucose Log

DATE	Breakfast	Lunch	Dinner	Bedtime	Comments: changes in diet or activity, stress, illness, ketones, hypoglycemia, etc.

Flow Sheet for Diabetes Care

Patient:_____ Date of Birth_____

Allergies: Yes_____None Known:_____ Type 1:_____Type 2:_____Prediabetes:_____

Foot Care by:_____ Eye Care by:_____ DM Onset Date: _____

VISIT DATE:								
HISTORY AND PHYSICAL								
Complete History & Physical (including risk factors, tobacco use, exercise & diet)								
Blood Pressure (Goal<130/80)								
Height _____ Current Weight:								
BMI (Target BMI<27)								
Eyes Fundoscopic(Qtrly) /**D**ilated Referral (Annual)								
Oral Exam (Every 6 months)								
Foot Exam (Every 3 months) (**V**=Visual Inspection, **M**=Monofilament, **R**=Referral)								
Pneumovax Date:_____ **Flu** Shot (Annual):								
LABORATORY								
HbA1c (every 3-6 months) Plot Results 10+								
9								
8								
At risk if >7								
Ideal Target 6								
Home BG Self Monitoring Results (Review patterns)								
Blood Sugar (**F**asting or **R**andom)								
Fasting Total Cholesterol / Triglyceride (Annual)								
Lipid Profile (HDL >45 / LDL<100) (Annual)								
Urinalysis (Annual)								
Microalbumin <30 (or 24 hr Urine CrCl) (Annual)								
Creatinine ratio or Serum Creatinine (Annual)								
COUNSELING AND EDUCATION								
Structured Diabetes Education								
Tobacco: Yes No / Alcohol Use: Yes No								
Physical Activity & Exercise Levels								
Nutrition & Weight Management								
Dietitian Referral if HbA1c> 7.0%								
Self Monitoring & Management Principles								
Foot & Skin Care								
Sexuality & Preconception Counseling								
Psychosocial Assessment & Depression Screening In past month have you often been bothered by: a) little interest or pleasure in doing things, or b) feeling down, depressed, hopeless								
Aspirin use:Yes No N/A / ARB or ACE use:**Yes No N/A**								
Self management goals (review every 3 mos)								
Specify Goal:								
Specify Goal:								

New Hampshire
Guidelines for Diabetes Care
Diabetes References:

The following documents contain reference materials which may be useful for professionals working with individuals with diabetes.

Data – Diabetes in New Hampshire
Reference Articles and Websites
Support Groups in New Hamsphire
Certified Diabetes Educators in New Hampshire
Diabetes Guidelines Subcommittee

Diabetes in New Hampshire

Diabetes is a common disease in New Hampshire

- In 2004, 6.5% of adults in New Hampshire had been diagnosed with diabetes.
- Diabetes becomes more common as people grow older. About 17% of people 65 years of age and older in New Hampshire have been diagnosed with diabetes.
- Up to one third of people with diabetes are unaware they have the disease.

Diabetes is a serious disease in New Hampshire

- People with diabetes suffer, often needlessly, from many diabetes-related complications.
- In 2004, among persons with diabetes in New Hampshire, there were
  16,505 hospitalizations
  244 amputations involving the foot or leg
  In 2001 there were 963 deaths
- Diabetes is also a leading cause of blindness, kidney failure, heart disease and stroke.

Diabetes is a costly disease in New Hampshire

- The average health care cost for a person with diabetes in 2002 was $13,243, compared with $2,560 for a person without diabetes.
- The costs of diabetes are nearly $132 billion per year in the United States.

Diabetes is a common, serious, and costly disease that poses a major public health challenge for New Hampshire. Maintaining a proper weight, eating a healthy diet, and exercising can help prevent diabetes. For those who already have the disease, complications of diabetes can be prevented with adequate care.

References:

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Centers for Disease Control and Prevention. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2003. Rev ed. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2004.

Review Articles

American Diabetes Association: Clinical Practice Recommendations 2006. Position statement: standards of medical care in diabetes. *Diabetes Care. 2006*; 29(Suppl 1):S4-S42.

Anderson BJ and Rubin RR. Practical psychology for diabetes clinicians. How to deal with the key behavioral issues faced by patients and health care teams. American Diabetes Association, Alexandria, VA. 2002.

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Report of the expert committee on the diagnosis and classification of diabetes mellitus.
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Expert Committee on the Diagnosis and Classification of Diabetes Mellitus.
Follow-up report on the diagnosis of diabetes mellitus. *Diabetes Care*. 2003; Nov; 26(11):3160-3167.

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Specific Topics

Complications

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Goals for Glycemic Control

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Management and Education

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Medications

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Lewis EJ, et. al. Renoprotective effect of the angiotensin-receptor antagonist irbesartan in patients with nephropathy due to type 2 diabetes. *The New England Journal of Medicine*. 2001; 345(12):851-860.

Nathan, D.M. Initial management of glycemia in type 2 diabetes. *The New England Journal of Medicine*. 2002; 347(17):1342-1349

Parving HH, et al. The effect of irbesartan on the development of diabetic nephropathy in patients with type 2 diabetes. *The New England Journal of Medicine*. 2001; 345(12):870-878.

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Nutrition

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Pregnancy and Diabetes

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Prevention

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Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *The New England Journal of Medicine*. 2002; 346(6):393-403.

Websites

American Academy of Clinical Endocrinologists:	www.aace.com
American Association of Diabetes Educators	www.diabeteseducator.org
American Diabetes Association:	www.diabetes.org
CDC Diabetes Program:	www.cdc.gov/diabetes/
American Dietetic Association:	www.eatright.org
5 A Day:	www.5aday.gov
Family Health History:	www.hhs.gov/familyhistory/
International Diabetes Federation	www.idf.org
Juvenile Diabetes Foundation:	www.jdf.org
Medline	www.medlineplus.gov
Minority Health Coalition:	www.nhhealthequity.org
National Institutes of Health:	www.ndep.nih.gov/
National Diabetes Information:	www.diabetes.niddk.nih.gov/
National Guidelines Clearinghouse:	www.guideline.gov
NH Diabetes Educators:	www.nhade.org
NH Medication Bridge Program:	www.nhha.org/fhc/initiatives/access/medicationbridge.php
Nutrition site, US government:	www.nutrition.gov

Directory of Diabetes Support Centers in New Hampshire

BERLIN
Androscoggin Valley Hospital
Contact: Cindy King
752-2200 ext. 115

CAMP CAREFREE
For kids with diabetes ages 8-15
www.campcarefreekids.org

CLAREMONT
241 Elm Street
Contact: Lauri Smerald
542-1370

CONCORD
Concord Hospital
Contact: Della Flanagan
227-7101

DIABETES SUPPORT GROUP FOR GREATER CONCORD
Contact: Steve Duggan
785-3332

DOVER
Cocheco Chapter of the ADA
Wentworth-Douglas Hospital
Contact: Kris Ferullo
740-2861 Info line: 740-3281

EXETER
Exeter Hospital
Parents of Children with Diabetes
Contact: Judy Nelson
772-2981

HEALTHREACH DIABETES
Type 1 Diabetes &
HealthReach Diabetes
Type 2 Diabetes 4th Wednesdays
Contact Judy Nelson
772-298

KEENE
Cheshire Medical Center
Dartmouth Hitchcock Keene
Contact: Patti Shuman
354-5454 ext. 3815

KINGSTON
Contact: Judy Nelson
772-2981

LACONIA
Insulin Pump Club
Contact: Carol Lines
527-2850

LANCASTER
Weeks Medical Center
Contact: Jessica Coy
788-5284

LEBANON
Dartmouth Hitchcock Medical Center
Insulin Pump Group
Contact: Rita Odell
650-8630

Diabetes Patient Support
Contact: Rita Odell
650-8630

MANCHESTER
Insulin Pump Support Group
Contact: Diane Schor
663-6431

NASHUA
Parents of Children with Diabetes
Contact: 882-3000

"Let's Talk about Diabetes"
St. Joseph's Hospital Support Group
595-3971 (cardiovascular center)

NORTH CONWAY
North Conway Congregational Church
Contacts: Patti Duprey 356-5472 or
Emily Beaulieu 447-3500

PORTSMOUTH
Portsmouth Regional Hospital
Contact 433-5160

ROCHESTER
Frisbie Memorial Hospital
Contact: Barbara Ingraham
994-0120

SALEM
Northeast Rehabilitation Hospital
Contact: Mary Breen
898-5023

WOODSVILLE
Cottage Hospital
Contact: Susan Montague
747-9000 ext 2154

PLEASE NOTE:
Inclusion in this listing should not be considered an endorsement of education services provided.

NHADE Diabetes Educator Directory by Region

Berlin

Androscoggin Valley Hospital
59 Page Hill Rd
Berlin, NH 03570-3542
(603) 326-5631
Cynthia King, RN, BSN, CDE

Clermont

Lauri Smerald, RN, MS, CDE
241 Elm Street
Claremont, NH 03743
(603) 542-1372

Concord

Concord Hospital Diabetes Self Management Program
253 Pleasant Street, Suite 301
Concord, NH 03301
(603) 227-7101
Betty-Jane Anz, RN, BSN, CDE
Della Flanagan, RD, LD, CDE, M. Ed, BC-ADM (603) 230-6193
Barbara W. Dagenais, RD, LD, M. Ed, CDE, BC-ADM
Penny Sawyer, RN, CDE
Kathy Burzynski, MS, RD, LD, CDE, CNSP
Celeste Kidder, RD, LD, CDE
Sarah Foulkes, RD, LD, CDE
Erica Mumford, RD, LD, CDE

Derry

Parkland Medical Center
1 Parkland Drive
Derry, NH 03038
(603) 432-1500
Corinne Chaar, RD, CDE ext 3295
Laura Simpson, RN, MA, CDE ext 3229

Dover

Mary Jo Dudley, RN, BSN, CDE
Private Consultant
8 Southwood Dr.
Dover, NH 03820
(603) 749-3899

Endocrinology & Diabetes Consultants PC
19 Webb Place
Dover, NH 03820
(603) 742-1143
Bonnie Noury, BSN, CDE
Melanie Rhoades MS, RD, LD, CDE

Strafford Medical Associates
15 Old Rollinsford Rd
Dover, NH 03824
(603) 742-3664
Ann Marie West, RN, CDE

Wentworth-Douglass Hospital
789 Central Ave
Dover, NH 03820
(603) 740-2861
Kris Ferullo, RN, BSN, CDE (603) 740-2861
Cindy Hackett, RD, LD, CDE (603)740-2488
Megrette Hammond, RD, LD, CDE (603) 740-2653
Sandra Sheeran, RN (603) 740-3208

Etna

Gita Patel, MS, RD, CDE, LD
7 Partridge Rd.
Etna, NH 03750
(h) (603) 643-3930
(fax) (603) 653-0222

Exeter/Hampton

Core Physician Services
Dr. Nadeau
881 Lafayette Rd.
Hampton, NH 03842
603-926-8811
Loretta C Grimm MS, RN,CS-FNP,ARNP,CDE

Exeter Hospital
5 Alumni Drive
Exeter, NH 03833
(603) 778-7311
Diane Loranger, RD, LD, CDE

Exeter Hospital

HealthReach Diabetes, Endocrine & Nutrition Center
881 Lafayette Rd. Suites G & H
Hampton, NH 03842
(603) 926-9131
Theresa McKenney, RD, LD, CDE
Judy Nelson, BSN, RN, CDE
Wendy Drew, RN

Groveton

Weeks Medical Center
Groveton Physician Office
Groveton, NH
636-1101

Keene

Dartmouth Hitchcock Clinic
590 Court St.
Keene, NH 03431
(603) 354-5454
Patti Schuman, RD, LD, CDE ext 3815
Eileen Duffy, RN, ext 3474

Laconia

Lakes Region General Hospital
80 Highland Avenue
Laconia, NH 03246
(603) 527-2850
Carole Lines RD, LD, MBA, CDE
June Enck, RN,CDE (603) 524-3211 ext 6582

Lancaster

Weeks Medical Center-Dartmouth Hitchcock
170 Middle St.
Lancaster, NH 03584
(603) 788-5284
Jessica Coy, RD, LD, CDE

Lebanon

Dartmouth-Hitchcock Medical Center
1 Medical Center Drive
Lebanon, NH 03756
(603) 650-8630
Diane Bilotta, ARNP, MSN, CDE
Ann Christiano , MS, ARNP, CDE, Pediatric Endocrinology (603) 653-9877
Carol B. French, RD, LD, MS, CDE, BC-ADM, Adult Endocrinology
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The Guidelines Committee is a subcommittee of the Diabetes Advisory Coalition.
A complete listing of members of this larger group may be obtained
by calling (603) 271-5173.

NHDEP MATERIALS ORDER FORM

Primary Care Materials	Quantity		Primary Care Materials	Quantity
NH Guidelines for Diabetes Care Packet			Foot Poster	
Guidelines for Diabetes Care Laminated Card			Hemoglobin A_1c Brochure	
Flow Sheet for Diabetes Care (Tear off tablets of 50 sheets each for use in patients' charts)			Pre-diabetes Brochure	
Diabetes Care Card (patient wallet card)			Other	
Blood Glucose Log (Tear off tables of 50 sheets each)				

There is no charge for materials. Please allow 2-3 weeks for delivery.

Please mail the items to:

Name: _____

Affiliation: _____

Address: _____

Phone: _____ Fax: _____

To order materials please fax this form to :
(603) 271-5199
OR
Mail to: NH Dept of Health & Human Services
Division of Public Health Services
Diabetes Education Program
29 Hazen Drive
Concord NH 03301

QUESTIONS? PLEASE CALL 1-800-852-3345 EXT. 5173 OR (603) 271-5173